NW-ACPA / WSDOT
Minutes for Monday, April 21, 2014 Meeting

Day/Time: **Monday, April 21, 2014, 10:00 AM – 12:00 Noon**

Location: **WSDOT Cle Elum Maintenance Conference Room, I-90 Exit 80**

Attendees:

David Jones, WSDOT	Jim Allen, ACME	Darrel McCallum, WSDOT
Jim Powell, NW ACPA	Johnnie Zabel, Salinas	Mark Russell, WSDOT
Dave Erickson,WSDOT	Jeff Uhlmeyer, WSDOT	

Next NW-ACPA Meetings Dates:
Date: October 6, 2014 Location: at WSDOT Cle Elum Maintenance Conference Room, I-90 Exit 80, 10:00 AM to 12:00 Noon.

Meeting Minutes available on line at:
http://www.wsdot.wa.gov/Business/Construction/MeetingMinutes.htm

New Business:

Air in rapid setting concrete used for fast track Panel Replacements. - Johnnie Zabel

Per 5-01.3(1)A2 Portland Cement Concrete says '*…air entrained with a design air content of 5.5 percent'.* 5-01.3(1)A Concrete Mix Designs allows the use of patching materials. Patching materials generally are either mixed in a small mixer or a volumetric truck style mixer. In small mixers you do not add air to the mix. These styles of mix design are very "high slump", they still meet the water cement ratio but are what most would call wet. There is not WSDOT guidelines to test this style of mix designs for air. In a few project we performed this last year there was controversy between contractor/Redi-Mix supplier/WSDOT on how to perform testing. Generally these mixes are low air, they are so high slump that they are unable to hold air. These mix design also are very high strength generally 10,000 - 14,000 psi. I would like to discuss eliminating the use of air in this style of mix designs.

4/21/2014 – The discussion centered on the need for air in these higher preforming mixes. These mixes come to the job site or are mixed with mobile mixers with high slump, but set rapidly. It is difficult to get air into these mixes. The currently don't fit under the 9-20 standard specification and are there for treated as a concrete mix. It was suggested that they behave more like a SCC mix than a conventional concrete mix. It was suggested that the WSDOT should consider not having air requirement if the Mix design indicates good freeze/thaw resistance per ASTM C 666. It was also suggested that we look at using

WSDOT Test Method T 818 Air Content of Freshly Mixed Self-compacting Concrete by pressure method.

Action Item: Jim Powel agreed to look into this and come back with a proposal.

Stringless/laser control for slip-forming Johnnie Zabel

Section 5-05.3(7)A **Slip-Form Construction** is kind of bland on this issue. As of now it says "*The alignment and elevation of the paver shall be regulated form outside reference lines establish for this purpose".* With todays advancement in slip-form paving the move to laser/stringless controls need to be addressed. I would propose something like this.
"***If the Contractor proposes to use any type of automatic laser controls, submit a detailed description of the system and perform a trial field demonstration in the presence of the Engineer at least one week prior to start of paving. Approval of the control system will be based on the results of the demonstration and on continuing satisfactory operation during paving***."

4/21/2014 – Johnnie Zabel of Salinas Construction reported that they completed a one hundred percent string less job by change order. They used a Leica product. They basically generated a 3 D model of the job, set up two total stations that sent information to the paver, and used GPS rovers behind the paver as a check. The project was 500 foot section of flat ground. Jim Powell noted that the industries uses laser screeds to produce super flat floors fast.

Alternate material for the installation of dowel bars and tiebars in existing PCCP – Robert Seghetti

4/21/2014 – Jim Allen of ACME Paving brought samples of and discussed using AMBEX Cementitious Anchoring Capsule for tie bars and dowels. This is a dry pre-mixed cement grout that is contained in a water permeable wrapping. Once the grout capsule is saturated in water it becomes a fast setting grout. The system was reported as being used in Minnesota, New York and Idaho. It was suggested that we contact Mark Gaines, The Bridge Construction Engineer to see if the structural side of the house had any experience with the system. Mark's comments were " I am not familiar with Ambex AAC and don't believe we have ever used a product like this for bridge or structure applications. Based on the data sheet, it seems like a good product with documented pull-out capacities. While you aren't looking for pull-out capacity, a high pull-out capacity provides some indication that the hole has been completely filled with a high-quality material.

A couple things that could be concerns. I would imagine that dowel bars see considerable cyclic loading as heavy vehicles pass over the joints. I'd have some concern that this product would

not hold up as well as an epoxy to repeated cyclic loading over a number of years. Cementitious products are likely more brittle and less pliable than epoxy-based product. The other thing you may want to look at is whether this product is suitable for horizontal anchoring like you would have with dowel bars. The data sheet doesn't identify if this is appropriate for only downward vertical anchors or if it works for horizontal anchors. Epoxy product data sheets are usually very specific with respect to what applications that are suitable for.

I have not heard anything about 9-20 products bonding better to dry surfaces. However, I very quickly took a look at three of the products covered by QPL 9-20.2 (SikaQuick 2500, Tamms Express Repair and Quikrete FastSet DOT Mix). All three of these products require saturated surface dry conditions before placement. I assume the other products do as well, but I didn't check. From my experience, we would always rely on following the manufacturer's recommendations for proprietary products like these. Deviating from these recommendations could product a product that doesn't achieve the properties identified in the data sheets. If there is research on this, could you have NW-ACPA forward it on to us/me?"

Action Item: Jeff Uhlmeyer to check with other states and then possibly look for a job to try them on.

Old Business:

Smoothness requirements for PCCP rehabilitation

10/7/2013 – The bid item under section 5-05.5 "Ride Smoothness Compliance Adjustment" was recently placed in a PCCP grinding project (section 5-01). This created an issue in that the adjustment is calculated by multiplying the unit contract price for cement concrete pavement, times the volume of concrete, times the Ride Smoothness Profile index. The problem is that we pay for grinding by the square yard not cubic yards. Currently we wouldn't pay an incentive for grinding. The question was asked if we should pay an incentive for grinding. It was concluded that the small panel replacements were not a big deal and would not be considered for incentive. Jim Powell pointed out the International Grooving and Grinding Association (IGGA) is working on a smoothness specification. Jim Powell said he will see if he can get a copy and send it out to the group.

4/21/2014 – Jim reported that the IGGA Specifications were not available yet. The Departments van is being equipped with a line laser that should take out any variability due to tinning. There are two ways to go about smoothness specifications absolute or percent improvement. The Department uses three different schedules of pay factors for the smoothness of HMA. IRI can vary depending on the time of the day. You can use a lightweight vehicle or a Ride Van. Contractors prefer to have the information collected by the Ride Van when bidding. The walk through worked well on a recent project. Having the ability to get out and look at the road with traffic control in place is great.

Action Item: Jim Powell to get a copy of the IGGA smoothness Specifications.

Time of placement for end dump trucks needs to be extended to match those requirements in 6-02.3(4)D.

4/15/2013 – The time constraint is in Section 5-05.3(3)B. This specification allows the concrete to be delivered to the job site in nonagitator trucks provided it is fully discharged no later than 45 minutes after the introduction of mixing water to the cement and aggregates. Section 5-05.3(8)C, states that when a pour is discontinued for more than 45 minutes a transverse construction joint shall be installed. The goal is to insure the concrete is plastic enough when placed to prevent a cold joint from forming. The real issue is not the time in the nonagitator truck but the travel distance. The longer you travel the more likely you are going to have segregation, caused by vibration of the concrete. It was asked if a conveyor system between the truck and the paving machine would remix the concrete. There are some screws in the hopper to move the material, but they were not meant to remix the concrete. It was decided that the Industry would come back with a proposal for change to the time limit.

10/7/2013 - Wisconsin has developed a specification that Jim Powell handed out. This specification is based on concrete temperature at the time of placement. It suggests that you could place concrete pavement up to 60 minutes after batching when a retarder is used. ACPA has no guide lines on this issue. It was noted that we would rarely have a problem placing concrete within 60 minutes.

The requirement for that the asphalt surface temperature not exceed 90ºF needs to be examined. It was believed that this relates to placing concrete pavement over the top of recently placed Hot mix Asphalt (HMA) and that the temperature of the HMA should cool down to 90ºF before the concrete is placed.

4/15/2013 – The group wasn't sure there is a problem here, there are options paving at night, or using water to cool down the surface temperature. Pavecool was mentioned as a tool that can be used to predict HMA pavement cooling rates. The concern is with early age cracking. Jim Powell and Jeff Uhlmeyer agreed to use HIPERPAV and determine if we are being too conservative.

10/7/2013 – It was suggested that we use HIPERPAV to analyze and allow increases in temperature. It was noted that the risk of cracking is from the bottom up. It is basically a strength gain vs. shrinkage issue. We rarely see pavement cracking outside the contraction joints. The HMA acts as a heat sink. HIPERPAV would allow for condition specific temperatures to be utilized. Kurt suggested using the standard specification temperature of 90° F and allow for

HIPERPAV to be utilized to demonstrating that a higher temperature could be allowed. Jim and Jeff will demonstrate HIPERPAV at our next meeting.

Action Item: Jim Powell and Jeff Uhlmeyer prepare a demonstration of HIPERPAV

4/21/2014 – We were not able to demonstrate the HIPERPAV program as does run on Windows 7 .0 or 8.1

Spall repairs within 6 inches of dowel bars.

10/3/2011- The Department was asked to reconsider the specification that does not allow a patch within six inches of dowel bar.

4/16/2012- The Department express concerns with patches within six inches of the dowel bar. The industry representatives did not see a concern with spall repairs closer to the dowel bars and felt the real issue was in the definition of what a spall repair was. The industry will work with WSDOT to better define spall repair.

10/1/2012 – Nothing to report on this item.

4/15/2013 – The discussion centered on the concrete cover needed to transfer loads across the dowel bar joints. It was mentioned that there is research available that suggest that you need at least 3 inches of concrete cover to transfer the loads. Jim Powell agreed to pass that information along for consideration.

10/7/2013 – Jim Powell said that since bars are ok anywhere in the middle third and we need three inches of cover above the bar, based on research. On a 12 inch slab the bars could be within four inches of the surface and with a three inch cover requirement you could allow a one inch spall repair over the bars.

Thickness deficiency

10/7/2013 – Jim Powell pointed out that the adjustment for thickness deficiency is extreme. Standard Specification Section 5-05.5(1)B, ***Thickness Deficiency of More than 0.05 Foot*** *requires that the area of the deficient thickness be identified. Then if the Engineer allows the deficient panels may be allowed to remain, but they would not be paid for plus a further penalty is assessed in the amount of 25 percent of the Contractor's unit bid price for the panels. The Contractor would also be responsible to pay for all the cores required to determine the area of the deficiency. It was suggested that we use some sort of life cycle cost to determine the appropriate amount to reduce the payment for the deficient pavement thickness.*

4/21/2014- Jim looked into design life versus pavement thickness and determined that at 150 million ESAL's you need about 9.5 inches of pavement thickness to achieve a 50 year design life. If you add a one inch for future diamond grind and discount the top ½ inch that brings you to 11 ½ inches. That leaves ½ inch or 0.04 feet, right about were the specification is. Jim could not come with anything else but suggested looking at using a statistical acceptance, Percent within Limits PWL.